



MUSEUM  
ALLIANCE

# QUARTERLY

LOS ANGELES  
COUNTY MUSEUM  
OF NATURAL HISTORY  
VOL. 6 NO. 2  
FALL ISSUE 1967



"We are such stuff as  
dreams are made of,  
and our little life is  
rounded with a sleep."

Shakespeare  
*The Tempest*,  
Act 4, Scene 1





## The late William J. Sheffler

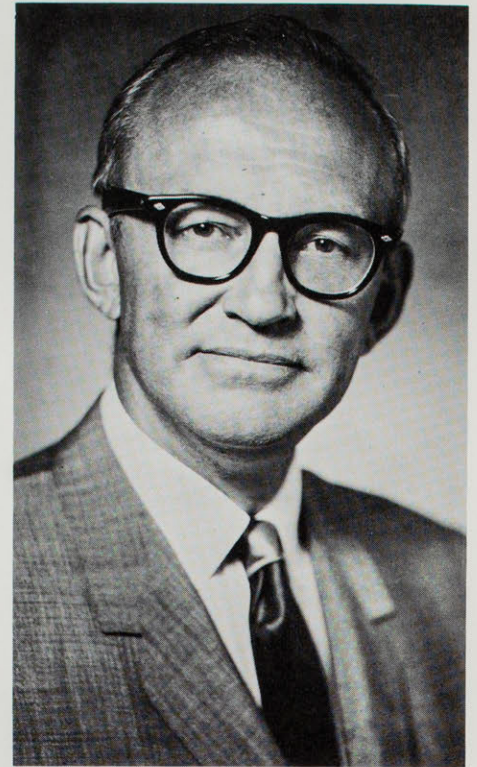
On the 25th of August, 1967, with the passing of Mr. William J. Sheffler, our Museum lost one of its staunchest supporters. Shown on the right above, he discusses a specimen with Dr. Theodore Downs in the newly dedicated William J. Sheffler Wing containing the vertebrate paleontology laboratory. "V.P." was a major interest and he was instrumental in arranging the purchase of the California Institute of Technology fossil collection, recognized as one of the foremost in the United States, for the Los Angeles County Museum of Natural History.



Ornithology was his personal hobby and his own collection gathered during a life time is extensive and important in its field.

A man of leadership and vision, he served with distinction on our Board of Governors from 1951 until his death, and held the office of Secretary for the past thirteen years. His loss will be felt at every level of Museum activity. We will not soon find another man so devoted to our Museum, or so dedicated to the accomplishment of its goals as William J. Sheffler.

## Ed. N. Harrison



Mr. Ed. N. Harrison has been elected President of the Board of Governors of the Los Angeles County Museum of Natural History succeeding Mr. William T. Sesnon, Jr., who served in that position for fifteen years.

The resignation of Mr. Sesnon and of Dr. Joseph Koepfli, and the untimely death of Mr. William J. Sheffler left several vacancies on the Board. Mr. Mynatt Smith of Whittier, and Mr. Richard C. Seaver of Los Angeles have been appointed Governors to fill these positions.

Mr. Harrison has been a member of the Board of Governors for twelve years, serving as its First Vice President since 1957.

Ornithology is his chief personal specialty but his interests also include mineralogy and archeology. His long association with the Museum has given him a well rounded understanding of all its major departments.

The Museum Alliance joins the staff of the Museum in wishing Mr. Harrison a long and successful "tour of duty" in the important and well deserved office to which he has been elected.

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## ERRATA

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### PAGE 2

Photo of William J. Sheffler is in center of page, not at right above.

### PAGE 5

Caption should read **Cannabis sativa**. (Picture printed upside down.)

### PAGE 8

Caption beneath upper picture should read **Ipomoea violacea**.

### PAGE 10

Caption beneath upper picture should read **Salvia divinorum**.

Caption above lower right hand picture should read **Lophophora Williamsii**.

### PAGES 22-23

Captions on two lower photographs should be reversed. James Garbani and Dr. Herbert Friedmann on the left; and James Garbani and Theodore Downs on the right.

### PAGE 29

Delete reference to #21 on photograph caption.

### PAGE 30

Delete reference to #15 on photograph caption.

Correct spelling on lower photo caption should be "Celestite."



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# QUARTERLY

LOS ANGELES COUNTY MUSEUM  
OF NATURAL HISTORY  
VOL. 6, NO. 2 FALL ISSUE 1967

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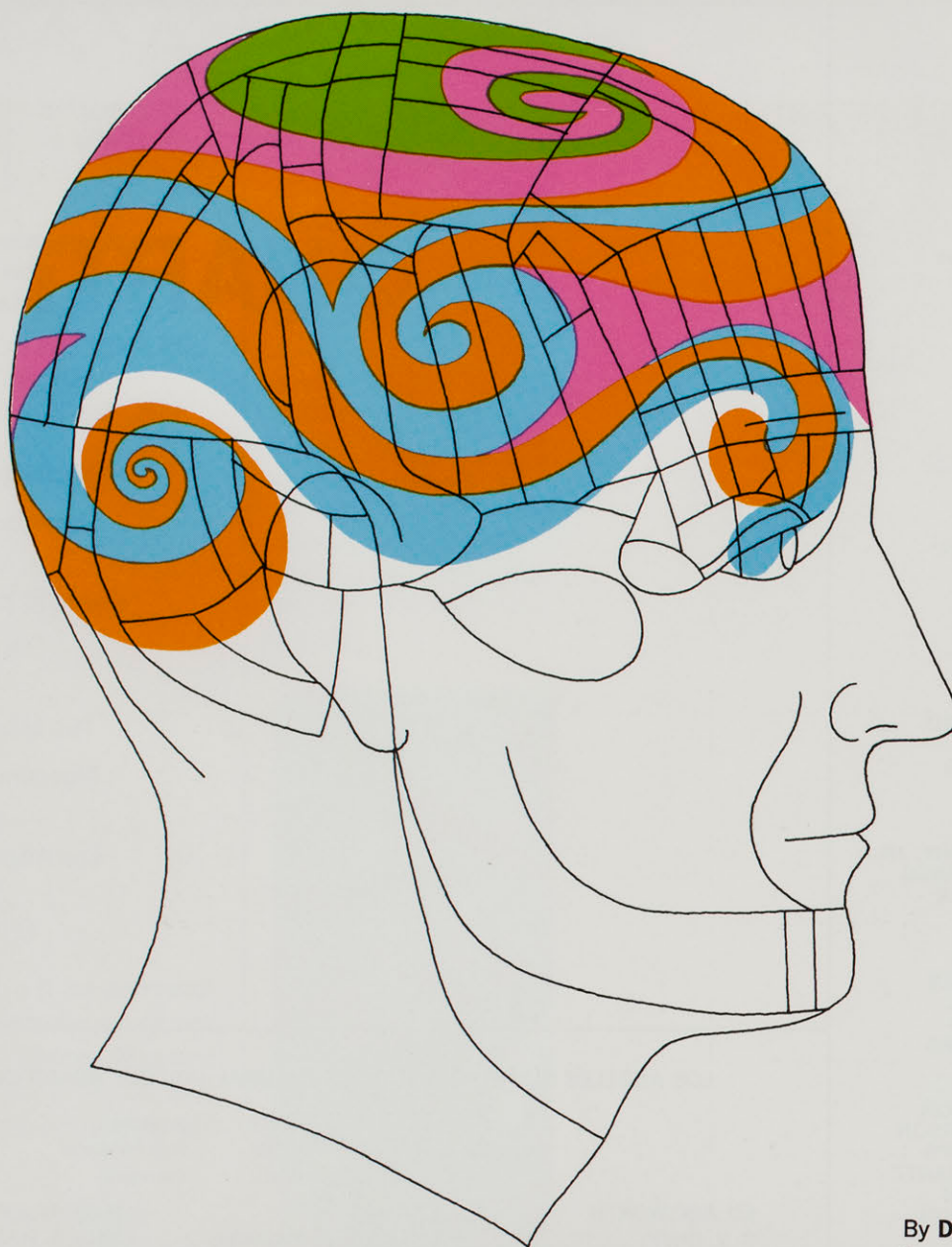
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# Hallucinogenic Plants

By Dr. William Emboden  
Research Associate in Botany  
Assistant Professor,  
San Fernando Valley  
State College

"No civilization has found life tolerable without—the things that provide at least some brief escape from reality."

So writes Will Durant in his *Life of Greece*. To this statement the botanist may append the observation that no flora of the world is without plants that can provide a respite from reality. Given the tortures of the flesh and mind omnipresent in civilization, it is understandable that man turns to chemicals which are capable of altering states of consciousness. Whether these narcotics constitute a socially acceptable pastime or violate a social taboo is a question

every civilization has had to answer — and the responses have been diverse.

For the Chinese emperor Shen Nung, in his pharmacopoeia of 2737 B.C., marihuana (*Cannabis sativa*) was an important medicine. To the Hindus it was "The heavenly guide," and to contemporary populations in the United States the same plant would seem to constitute a threat. The physiological effect has not changed, but rather the judgments of societies.

It is not the author's desire to discuss the validity of the use of any one of these plant derivatives; suffice it to say

that some of these form the basis for religions, masterpieces of great writing, and still others debilitate the individual to such a degree that he can no longer participate in the society in which he finds himself. Advocates of the usage of psychedelics, such as Aldous Huxley, have written intelligent treatises in favor of this induced state of exaltation and heightened awareness which he claims can be morally and intellectually instructive. This does not, of course, refer to the opiates which, being addictive, leave the individual without his freedom of choice.





*Salvia divinorum*



Of the five classes of drugs defined by Louis Lewin, the famous German physiologist and toxicologist, hallucinogens (psychotomimetics or psychedelics) fall into the category phantastica. The plants in this group are those which act upon the central nervous system to produce a dream-like state in which there is an alteration of consciousness of self, time, space and perception of the physical world. Quite often these states are accompanied by an acute sensitivity to color and hearing. Synesthesia may result, in which one sensation is altered or displaced by another, or the senses become temporarily interchanged. Much of the opulence of late nineteenth century French writing, such as the prose of Théophile Gautier or the poetry of Baudelaire, owes its peculiar lustre ultimately to the world of plants.

Geneticists and physiologists are coming closer to an understanding of some of the aspects of the mass of neural circuits called "mind." Like every other portion of man's anatomy, the mind is under chemical control and there is a chemical basis for the ardor and passion of lust, the rage of tyrants, and for "sleep that knits up the ravelled sleeve of care." Mind and heart have always been vehicles of the superstitious, and the sacred nature of the two is yet invoked in contrast to cause and effect reasoning that characterizes scientific thought. The use of hallucinogens in expanding conscious and subconscious states of mind seems an inevitability, but for the moment our lack of precise information on the long term effects of psychotomimetics would suggest prudence in their use.

Over forty species of hallucinogenic plants are known as natives of the New World (Schultes, 1961) whereas the Old World has produced only six species from the great quantities of material analyzed. In almost all cases, authoritative information is lacking on the precise method by which the active principle works on the physiology of man. In some instances it is thought that the active principle forms a secondary compound in the liver by combining with a protein; in other cases the psychotomimetic is thought to interfere with the normal oxidative processes of the brain. All of the aforementioned may be correct in

specific instances, for the psychedelic chemicals are as diverse as the plants which produce them. The following paragraphs are not an attempt to survey the "psychedelic sixties" from "pot" to "mellow yellow" (popular jargon for derivatives of *Cannabis sativa* and *Musa paradisica* — banana peel) but an abbreviated survey of a few of the most interesting hallucinogens; interesting because they have played an important role in one or several civilizations.

"Peyote" is a corruption of the word **peyotl** which in Nahuatl, the mother tongue of the Aztecs at the time of the conquest, means Silk cocoon or caterpillars cocoon. (Alonso de Molino, **Vocabulario** (1571) gives this definition: . . . **capullo de seda, o de gusano**. This I find curious in that **Lophophora williamsii** is not woolly or silken as this definition would imply.) **Peyotl** was one of the divinatory plants of the Aztecs and was regarded as a mediator between these men and their gods. Although most volumes discuss **peyotl** as the cactus **Lophophora williamsii**, there are at least four other genera of cactaceae which are known in Mexico as "peyote." (R. E. Schultes in the *Texas Journal of Pharmacy* (1961) has indicated that there are over ten species of cactaceae known as peyote; he adds to the above the genus **Ariocarpus** without indicating species.) In **Las Cactaceas De Mexico** by Helia Bravoh (1937) we find the following species bearing the name peyote: **Strombocactus disciformis**, **Astrophytum asterias**, **Roseocactus fissuratus**, and **Pelecyphora aselliformis**. This is not to say that all of these species are psychotomimetics, but alkaloids have been found in all but **Strombocactus** and I have been told of the efficacy of **Pelecyphora aselliformis**. Physiological experimentation on all of these would be most interesting. For clarity of discussion and for reason of its known effectiveness in producing hallucinations, we will assume **Lophophora williamsii** to be the peyote of common parlance. This species is by no means uniform in its morphology, for the Indians of Mexico are able to recognize four distinct "varieties." The active principle is mescaline, an alkaloid which has come to be confused with **mezcal** which is not a psychedelic and comes from the genus **Agave**. Eight other alkaloids have been isolated

from **L. williamsii** and may play some role in the production of visions.

Once relegated to a small area in north Mexico near the Texas border, peyote has a present distribution throughout much of Mexico, Texas, Arizona, and California. The plant is singularly unimpressive being a small grey-green knob about the size of a golfball excepting the large taproot which is most of the plant. An amusing account of the reason for this demure quality is found in the writings of Francisco Hernandez, personal physician to the king of Spain, who in 1576 made note that ". . . this root scarcely issues forth, but conceals itself in the ground, as though unwilling to harm those who may discover and eat it." The harvesting and use of the plant has become deeply enmeshed with the ritual of the Catholic Church in areas of Mexico where it is consumed, although the clergy has for centuries protested vehemently. In the year 1692, the Indians of the state of Coahuila had established a mission **El Santo de Jesus Peyotes** — can more be said with respect to the early widespread influence of this plant? It is not surprising that the dried sliced pieces of this plant were being referred to in the same manner as the Eucharist of the mass.

Ceremonies which have developed around the consumption of peyote by the Indians are diverse, yet they have several aspects in common. There is always a fire burning, groups rather than individuals partake, and chanting goes on most of the time. From four to twelve of these buttons are chewed in an evening and a period of meditation usually follows; during this time visual aberrations make their appearance. Nausea, anorexia, and insomnia frequently follow ingestion of the buttons. In the words of Havelock Ellis ". . . visions became distinct but still indescribable—mostly a vast field of golden jewels, studded with red and green stones, ever changing . . . the air around me seemed flushed with vague perfumes, producing with the visions a delicious effect . . . a kind of removal from earthly cares and the appearance of a purely internal life which excites astonishment."

The North American Indians finally won a battle with the Supreme Court of the United States and established the



Native Church of North America, in which the ritual is a modified Christian service centering around the consumption of peyote. Anthropologists and others who have witnessed these services have been impressed by the contemplative nature of the participants and the efficacy of the buttons in permitting a temporary release from the disenchantment of the life forced upon them by white men.

Marihuana, as indicated earlier, has been in use for over four thousand years. Not only is it consumed in a variety of forms, but the vocabulary for such products is enormous: **marihuana**, **hashish**, **bhanga**, **chares**, **pot**, **grass**, ad infinitum. All refer to hemp, *Cannabis sativa*. Thousands of years of cultivation and selection for the active principle as well as selection for the hemp fiber have produced a variety of genetically different forms; the most prized plants with respect to the resin are those grown in Yarkand in Central Asia.

Sexual differences are often conspicuous between plants and, as might be expected, it is the female that is the most sought after, for only the female plant produces the gummy exudate near the flowering tops. The crushed leaves and flowers along with the attendant resin forms the marihuana of illicit commerce. Two popular appearances of this material in the United States are as a sort of tobacco or smoking mixture of the leaves and as a greenish paste which is almost exclusively resin and goes under the name of "hash." It was in this latter form that *C. sativa* became popular in Paris in the late nineteenth century.

Despite strong legislative prohibition, the consumption of marihuana in the United States is increasing enormously. Courts of large cities are finding it difficult to discharge their normal affairs due to the number of cases involving this offense.

A superb survey of the literature on marihuana, including the report of the Mayor's Committee of New York, is to be found in **The Marihuana Papers**, edited by Solomon. This book endeavors to remove much of the current superstition that has for so long shrouded this subject.

Tetrahydrocannabinol is considered at present to be the active principle in

marihuana. Used as a tincture, and in synthetic forms, it has successfully cured chronic depressive states and problems of depersonalization. Most interesting is a statement from two doctors (Parker and Wrigley, 1950) in which they suggest that synhexyl (a synthetic preparation) "... might be useful for tiding over depressions and would help in keeping cases out of mental hospitals."

Morning glories were described and illustrated by Hernandez in his post-conquest chronicles of medicinal plants of the Aztecs as vines which produce strange visions. The Aztecs knew of two such related vines which in Nahuatl were called **ololiuhqui** and **Tliltliltzen**. Not until 1938 was it known that the seeds of these morning glories produced the altered state of perception. Richard Evans Schultes describes finding the vines growing in the dooryard of a **curandero** who was using the seed as a sacred divinatory narcotic. The plant turned out to be **Rivea corymbosa**. More recently Gordon Wasson has identified **Tliltliltzen** as the seed of **Ipomoea violacea** a related genus in the same family. In both cases the seeds are ground by a metate and the resultant meal placed in a cloth bag in cold water, at which time the active substances diffuse out. It was in 1960 that these constituents were identified as amides of lysergic acid and d-lysergic acid, chanoclavine and clymoclavine. Before this time these latter two were known only from ergot fungus. Ergot replaces the grain in certain grasses, notably rye grass, and when accidentally incorporated into flour causes madness and abortion. This has been described repeatedly in history from the middle ages to the present.

Perhaps it is more than fortuitous that the elves and dwarfs of our childhood were pictured with decorative mushrooms having red caps flecked cream, for the mushrooms usually depicted are **Amanita muscaria** — one of the most powerful fungal psychedelics. This plant contains not only the unidentified hallucinatory agent, but also a very toxic alkaloid, muscarine; the two are often treated as synonymous in reviews though this is clearly not the case. Widely distributed throughout the United States and Europe, this plant has found greater popularity among the tribes of northeastern

Asia — the Tungus, Yakuts, Chukches (Chukchees), Koryaks and Kamchadales. Accounts of the use and ritual surrounding this colorful basidiomycete are described in some English letters of Oliver Goldsmith as early as 1762 and subsequently by a number of anthropologists.

Since the mushroom is rather scarce in N. E. Asia, a curious practice has developed. Women of the tribe chew the dried fungus into a pulp which is rolled into sausages and eaten by the men of the tribe. Two fungi are usually enough to produce a state of gaiety and exuberance. Strangely enough, after passing through the kidney it appears to be more potent in the urine that is excreted. As a testimony we have this account in Goldsmith's letters:

"The poorer (Tartars) post themselves around the huts of the rich and watch the opportunity of the ladies and gentlemen as they come down to pass their liquor, and holding a wooden bowl catch the delicious fluid. Of this they drink with the utmost satisfaction and thus they get as drunk and as jovial as their betters."

Kennan, who was among the Chukches in 1870, reported that a single mushroom was sufficient to keep a band intoxicated for a week, and a single mushroom would fetch three or four reindeer. It is interesting that the Japanese at an early time found another species of **Amanita** which they used in a similar manner. Great numbers of different genera and species of mushrooms are used in Mexico for the same purpose.

In the jungles of the Amazon one encounters a great variety of plant forms, not the least of which are the lianas or vines which rise from the forest floor to weave a dense canopy hundreds of feet above. One of these vines common in Colombian and Peruvian forests is **Banasteriopsis caapi** a plant which has for a long time been important in the lives of the Indians. It is not only a hallucinogen, but also an aphrodisiac. When the stem is crushed, made into a cold water infusion and strained, the alkaloid banisterine diffuses into the water. Upon drinking the brew, the central nervous system is excited and several altered states are experienced: augmentation of normal vision results in perception of brilliant ornamentation, unusual ability to see clearly in the dark, illusion of





*Lophophora Williamsii*



*Banasteriopsis caapi*



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rapid size changes in people and objects (shades of Alice in Wonderland); enhancement of intellectual activity is claimed to occur and a "psycho-erotic" effect is well documented. All of this culminates in a sort of euphoric condition terminated by a deep sleep.

A "psycho-erotic" effect can be reproduced in the laboratory with 5 mg. of banisterine (harmine), and reaction is almost instantaneous. Given the variety of responses to the brew, it seems likely that more than one alkaloid is operative. Reports by Allen (1947) and others indicate that the ritual use is associated with a "coming-of-age" ceremony for male adolescents. Drinking of the decoction is usually followed by copious vomiting and then an excited state in which flagellation usually plays an important role. As described, the spectacle is a bloody affair incorporating fantasies of wild beasts of enormous size being overcome, etc. Common cultural experience seems to lead to a sort of community vision, just as the participants in the **Ololuhqui** cult see visions of little people, the little people being equivalent to the gnomes, leprechauns, trolls, or even the Hobbit in a contemporary idiom.

A number of botanists and anthropologists have sought to identify the plant which the Aztecs knew as **pipiltzintli** which grew in the area where **ololuhqui** flourished and was referred to as an **hierba** which had male and female forms. Since the Maztecs use a plant which they call **hojas de las Pastora** as a divinatory, Wasson (1963) believes that this plant is the **Pipiltzintli** of the Aztecs. It would be desirable to be able to identify this lost plant of the Aztecs as **Salvia divinorum**; however one must account for the sexual dimorphism implied in **macho** and **hembra** (male and female) which are to be found in early descriptions. This does not fit any members of the genus **Salvia**. However, Schultes (fide Wasson, 1963) suggests that the reference may be to the visions of **hom-brecitos** and **mujercitas** (little men and little women) which are the supernatural dwarfs figuring prominently in the sacred mythology. Such speculation, while interesting, seems to stretch a point.

Leaves of **S. divinorum** are ground in a **metate** by a young virgin. This pulpy mass is leached in cold water and the decoction served to the individual in

need of healing or enlightenment. I can attest to the bitterness of this liquor. The ceremony associated with drinking the brew involves confession and prayers to the Virgin Mary. Usage of this plant is strictly ritualistic, and the period is not so much a state of euphoria as it is a time of revelation.

No discussion of psychedelics from plant sources would be complete without the inclusion of the opium poppy, even though opiates are not truly hallucinogenic or phantasy-provoking. De Quincy and Coleridge were both addicted to opiates and did much writing about their visions; however, these two were unusually imaginative individuals and their experiences have not been general among those who use opiates. Lasagna et. al. (1955) confirmed an observation made by others, that, pleasure is derived from opiates only by individuals who are in constant pain or who are psychopaths. Thus, opiates are in a category apart from all of the aforementioned drugs.

Opium was known to the ancients under the name "potent destroyer of grief," and even at that time Erasistrates and Diagoras of Melos warned against drinking poppy milk. It seems a deception of nature to encounter this sort of "flower power" in the form of a grey-green plant only a few feet tall with graceful nodding white, pink or purple flowers.

None of the plant parts but the unripe fruit contains narcotic alkaloids. The milky exudate of the unripe seed capsules is obtained by slashing the fruit with a many-bladed knife. This is the occupation of women and children in Persia, Turkey, China and the few other countries that grow the plants. As the milk dries it is transformed into a dark brown gum which when rolled into one pound balls finds its way to world markets.

Of the 25 alkaloids isolated from this tarry mass, morphine and codeine are the best known. Heroin does not occur naturally in opium but is manufactured from morphine. Fortunately, the rate of addiction to opiates is decreasing; in part this may be attributed to education with respect to the dangers of addiction, but another facet is the wider use of non-addictive euphorants such as marihuana and the synthetic product L.S.D.

The foregoing are but a few of the

many narcotics produced by plants; doubtless, many more will be discovered in man's quest for escape from pain, physical or emotional, and his desire to probe the unexplored regions of his mind. The desire to know is as old as the history of mankind and it does not seem likely that any amount of legislation will put an end to this pursuit. Laboratory syntheses of similar chemicals are now carried out throughout the world. A sensible and dispassionate survey of the effects of these various drugs should be made, and future legislation should be borne of scientific investigation and survey.

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Cannabis Sativa



Papaver Somniferum

Ipomoea Violacea





New sights  
and sounds  
in the museum

**Battles,**  
**Birds**  
**and**  
**Balladeers**

by **Richard Lipscomb**  
Museum Education Specialist

The excellent orientation films at historic Williamsburg dramatize the part that 18th Century Virginia capital played in the American Revolution — giving background as well as particular incident and homely flavor to the thousands of travelers who flock there yearly.

The new full-size replica of Philadelphia's Independence Hall at Knott's Berry Farm in Buena Park, California, uses voice recordings and sound effects in its darkened assembly chamber to give a capsule presentation of the debates that preceded the decision to issue a Declaration of Independence.

In a number of famous Museums and institutions throughout the world audible and visual means have been found to help dramatize the exhibits therein—and the Los Angeles County Museum of Natural History is not outside this trend.

In the African Mammal Hall the new seven-minute motion picture, "The African Elephant," produced by Maurice Machris with Kevin Duffy, now may be viewed continuously on week-ends, and at the push of a button on week-days. The film is rear-projected within a giant ball set on a pedestal (equipment was donated by the Union Oil Company) and placed directly to the left of the Museum's unique Elephant Habitat Group. Not only does the film give the viewer the benefit of seeing typical life activities of the elephant but it also includes the added validity of actual footage taken by the



Rear-projection sphere in rotunda showing "The Museum: Gateway to Perception."





Mobile audio unit

Knudsen-Machris Expedition which went to Africa to collect the habitat elephants. The information this film gives has made it possible to present background to the viewer that would otherwise have required prohibitively voluminous printed labels. The result has been an intensified interest and greater enrichment for the viewer.

Another motion picture to be prominently seen in the Museum these days is the film, "The Museum: Gateway to Perception," featured in the most recent issue of the *QUARTERLY*. This film is also rear-projected within a large sphere and is located at the northeast corner of the Museum's main rotunda, just beyond the two fighting dinosaurs. The private ear on this film is extremely private and the viewer of this film will hear no narration or background music unless he picks up one of the individual ear cones in the satellite pedestal placed before the projection screen. Even without sound the film, in brilliant color, sharp close-ups and arresting motion presents an attractive index of a number of exhibits the viewer may see in the Museum. (The film is the Museum's own and was shot exclusively in the Museum.) Not only does the film give a kaleidoscope of the Museum's offerings but it also depicts other viewers at the exhibits thus suggesting the dramatic perspective of the visitor's own presence in the Museum.

The Independence Hall dramatization previously mentioned which telescopes the debates preceding the Declaration of

Independence uses eighteen separate sound tapes and a great many individual speakers to handle the number of characters involved and the sound effects required. Because of its special visual quality the Museum requires that any addition of sound be made in a subtle way that will enhance the flavor of the gallery and add to the enjoyment of the visitor, not distract from it. Hence, the Education Division has planned a modest audio addition to several of the Halls of the Museum, eschewing actual dramatization, but adding effect. An experiment had been made some months earlier with the playing of a music box tune of appropriate era and character in the gallery exhibiting early Quilts and Coverlets. The enthusiasm with which this was received prompted the wiring of other galleries for appropriate sound.

In the planning and implementation stage now are tapes to project both music and/or animal sounds into the Rancho, Westward Movement and African Mammal Hall galleries.



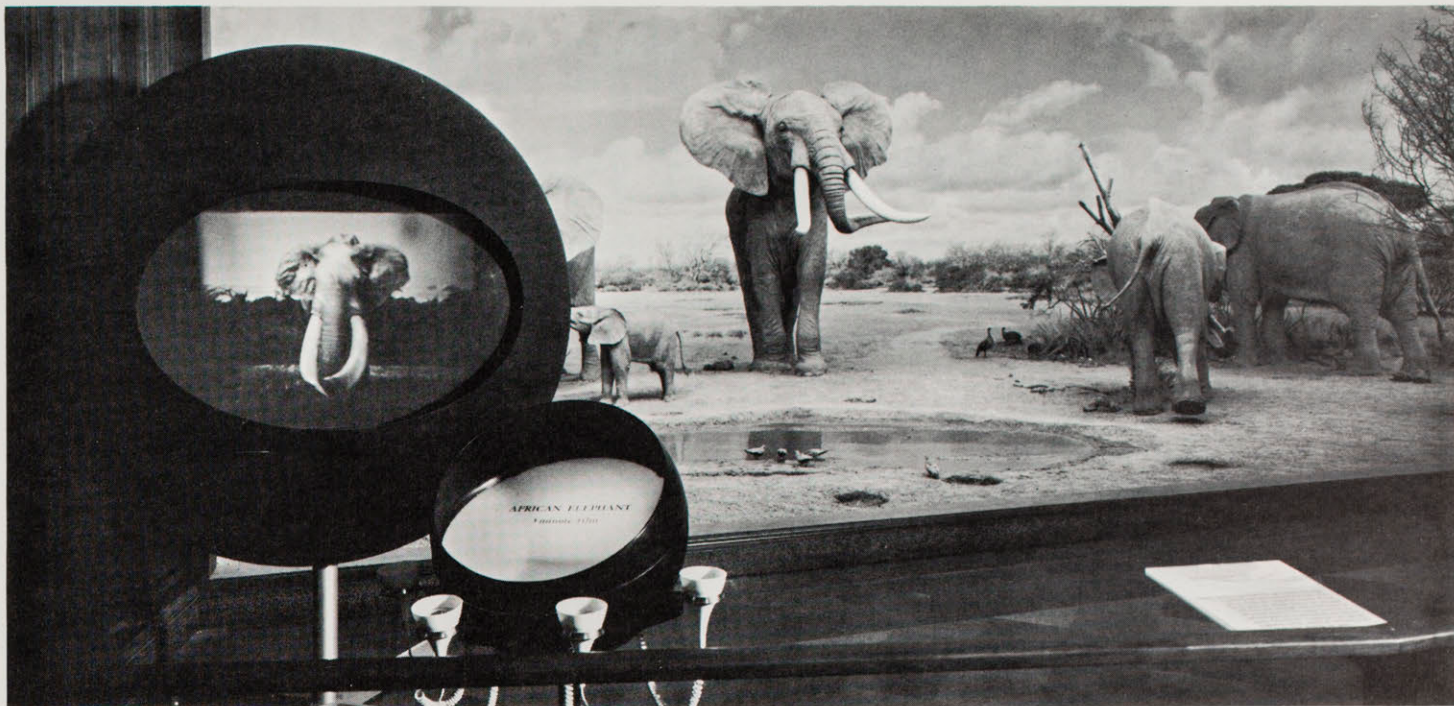
Docent model's tape recorder

Appropriate songs for the period have been selected for the history halls. Wanderers in the Rancho Hall will hear: "El Pavito Real," a song about the linnet and peacock, "La Calandria," the lark, "El Jabali," the Wild Boar, "El Palo Verde," the Palo Verde tree, "El Zapatero," about an old shoemaker, and others. As additional songs are found to set the flavor of the period they will be added and the repertoire changed.

In the Westward Movement Hall strollers will hear the typical songs: "The Bent County Bachelor," "Long John," "Hang Me, Oh Hang Me," "Billy Barlow," "Tighten On the Backband," "The Spanish Fandango," and others of the wagon-train era when Americans walked the long trails over the Great American Desert to California and Oregon.

In the African Mammal Hall Museum Muzak will breach the dimension of sound with the songs of: the Marico Sunbird, the Battling Cisticola, the Wattle-Eyed Flycatcher, the Bronze Mannikin, the Red Fronted Tinker Barbet, the Rufus-Naped Lark, and the Bleating-Bush Warbler, all birds of Zululand — and the general African birds: the Sombre Bul-





Rear-projection sphere at elephant habitat showing "The African Elephant"

bul, the Tawny-Flanked Prinia, the Bou-bou Shrike, the African Hoopoe, the Mozambique Nightjar, and the Crested Francolin. Animal sounds to be introduced in the hall include: the distant sound of lions roaring, spotted hyenas, Chacma Baboon calling, White Rhinoceros snorting, and a Blue Wildebeest honking in the distance. The sounds, of course, will be intermittent, articulated separately and of a low volume for background merely.

For even more specific projection of animal sounds in selected Halls docent guides for the forthcoming school season will be supplied with small tape recorders programmed with specific animal sounds so that in lecturing to the classes the guides may present the actual sound of the animal talked about.

In the new Arms and Armor Hall now a-building it is planned to make full use of motion pictures, slides and sound effects to give the sight and sound of battle and the use of implements of war as well as give capsulized texts of the history of selected exhibits.

The use of audio-visual material behind the scenes by the Education Division of the Museum is no Johnny-come-lately; but only recently have these devices begun to be used more exten-

sively for the general public's benefit in the Museum. For some time the Education Division has used audio-visual aids in its Science and History Workshops and in the teaching of school classes in the galleries—with the provision of carts containing material germane to the gallery so that students can actually touch and feel objects such as beaver pelts, candle-moulds, etc., etc. Also, the Education Division for many years has provided a lending service which sends thousands of items, mounted animals, ship models, powder horns, etc., etc. to the schools each year. In addition, the Division has recently intensified the use of film in its ten-day training session each fall when a new group of guides must be trained to receive the more than one hundred and fifty thousand school children who come in classes for conducted tours each school year. To help prepare guides in this training to receive classes for any of the galleries for which tours are scheduled a greater use is being made of films and taped lectures. Films which a new guide will see include: besides the Museum's

own films about itself, "Ancient Death Trap," "Desert People," "Indians of California," "California's Dawn," "Mission Life," "Rancho Life," "California Becomes a State," "Placer Gold," "Lewis and Clark," "Fur Trappers Westward," "Stagecoach," "Indians of the Plains," "Candle Making," "Home Life, 18th Century Williamsburg," "Living Mammals," "Animals Unlimited," "Waterbirds of the Western Flyways," "Islands of the South Pacific," and "Polynesian Culture." Additional films are added as they are found to be effectively related to the areas of the Museum.

The Museum's exhibits are a great visual experience and with the tasteful inclusion of motion pictures, changing slide views and authentic sound the additional dimension of movement in both sound and sight has been added. This dimension will always stay subservient to the great purpose of the Museum to present the authentic object in the most appropriate setting; but the presence and suggesting movement of audio visual effects can add an additional evocative quality to the experience of the viewer in the Museum. It can be a further aid in making the Museum a moving, as well as a momentous, experience.



# All Roads Lead to the Los Angeles County Museum of Natural History





# The Chinese in Los Angeles

by William Mason  
Associate Curator  
of Archives

Los Angeles has had a Chinese colony for approximately one hundred years, yet there is relatively little factual material in print concerning the development of the Chinese community. It would be safe to say that there has been as much nonsense as truth written about the Chinese of California, and the same is probably true of the Los Angeles Chinese.

There were no Chinese of record who lived in the city prior to the American conquest of California. The so-called "Chino" who was one of the founders of Los Angeles never did settle in the pueblo, and he was probably of Filipino ancestry, rather than Chinese. The earliest known Chinese to permanently settle in California came in 1815, and served as the cook for the governor in Monterey.

When news of the gold strike in California reached Canton, the people of that region were quick to respond. Between 1849 and 1860, several thousands of Chinese came to California in search of gold, though few of them came to Southern California. There were two Chinese in Los Angeles listed in the 1850 census, and but 14 listed ten years later. Of these, 12 were men and two were women. The first woman from China arrived in Los Angeles in 1859, and few followed her prior to 1870. As early as 1860 there was a lone Chinese merchant, who was called "John Tambolin" by the local inhabitants, but there was virtually no Chinese community in Los Angeles until the late 1860's.

When the gold was becoming exhausted in northern California, many thousands of Chinese who had come began to return to China or seek alternative means of employment. In 1863 the transcontinental railroad began to employ Chinese labor and eventually imported thousands more during the six years it took to complete the railroad. The suffering and chaos in China caused by the Taiping Rebellion doubtlessly induced many Chinese to emigrate to California under the railroad contract system. When the railroad was completed in 1869, the Chinese were again obliged to find other means of making a living, although many continued to be employed in railroad work.

In May of 1869 Chinese laborers came south to Los Angeles in order to build a





wagon road near Newhall. By 1870, there were 172 Chinese living in the city of Los Angeles. Nearly half the Chinese in the city lived in the block just south of the Plaza, known as Negro Alley, and this was to remain a Chinese quarter until most of that block was demolished in 1950. Negro Alley was the scene of Los Angeles' notorious Chinese Massacre of October 24, 1871, when a mob of several hundred Caucasians shot, hanged, and stabbed 19 unfortunate Chinese in order to "avenge" the killing of one Lem Thompson. It later developed that Thompson was killed accidentally when he tried to step into a shooting affray between two Chinese rivals, who were fighting over a woman. The man who actually shot him escaped the lynchers and was not held for the killing. The anti-Chinese sentiment is difficult to explain in Los Angeles, unless one reads the inflammatory news articles of the San Francisco press which the Los Angeles papers strove to imitate or faithfully copy.

Despite this outburst of wrath, the Chinese community continued to grow in Los Angeles. By 1880, there were 605 Chinese living in the city, and of these, about 300 lived in the Negro Alley area. The vegetables eaten in Los Angeles were nearly all grown by Chinese in 1880. Of 60 vegetable peddlers in the city, 50 were Chinese. Small plots of ground were leased by these farmers and intensively cultivated and cared for. Many of these little farms were on West Washington Boulevard, irrigated by an extension of the Los Angeles *zanja* running down Figueroa Street. From this small beginning, the Chinese eventually expanded into the great retail and wholesale produce industry of Los Angeles, where they remain an influence in the Los Angeles vegetable business.

Between 1887 and 1891, Chinatown underwent a major change. The Negro Alley block was torn down, Los Angeles Street was extended through to the Plaza, and brick buildings replaced the aging adobes which had lined Negro Alley. All of Los Angeles was affected by the tremendous building boom, and Chinatown was no exception. Several buildings were razed by fire in 1887 on the east side of Negro Alley, but they were speedily replaced with brick construction within a few months. Flimsy two-story wooden rows of shacks on the

east side of Alameda Street were also torn down and replaced with the more substantial brick. By 1890 or 1891, Los Angeles' Chinatown had assumed the shape it was to have for more than forty years. Its main thoroughfares were Alameda, Apablasa, Marchessault, and Los Angeles Streets.

There were several drawbacks concerning life in Chinatown. The same building boom which had brought about the change from adobe to brick for the Chinese had also spurred the construction of prostitutes' "cribs" on Alameda Street. There were literally hundreds of these little one-story cubicles immediately adjacent to Chinatown, and they were occupied by women of varied nationalities, but primarily Americans and Europeans. The presence of prostitutes alone did not disturb the Chinese greatly, but the ruffians and hoodlums which frequented the area often made life miserable for rich and poor alike. Thefts by drug addicts, who lived off the prostitutes when they could, were also a problem. The pressure of hostility from the outside community was always present, and perhaps it was too much for some. Occasionally Chinese were found wandering about the streets insane, talking to themselves or behaving strangely.

After the 1880's, the Chinese of Los Angeles numbered in the neighborhood of about 2,000 persons, of whom roughly half lived within the little area east of the Plaza known as Chinatown. The population remained around a stable 2,000 until the 1920's; it rose to 3,000 by 1930. Gradually the number of those born in China declined, while the Chinese-American population increased. In 1890, there was a total of 1,871 Chinese in Los Angeles, of whom but 40 persons, mostly children, were natives of the United States. In 1900, there were 2,111 Chinese, of whom 225 were American-born. By 1910, the ratio had increased. From a total of 1,954, Chinese-Americans totaled 473. As early as 1900, the Chinese-American could provide a buffer between the Chinese-born and the non-Chinese. Such spokesmen as George C. Lem could receive coverage in the Los Angeles press when expressing the viewpoint of the Chinese. During the early 1900's, there seems to have been a turning-point in the rampant anti-Chinese feeling of the whites in Los Angeles. The

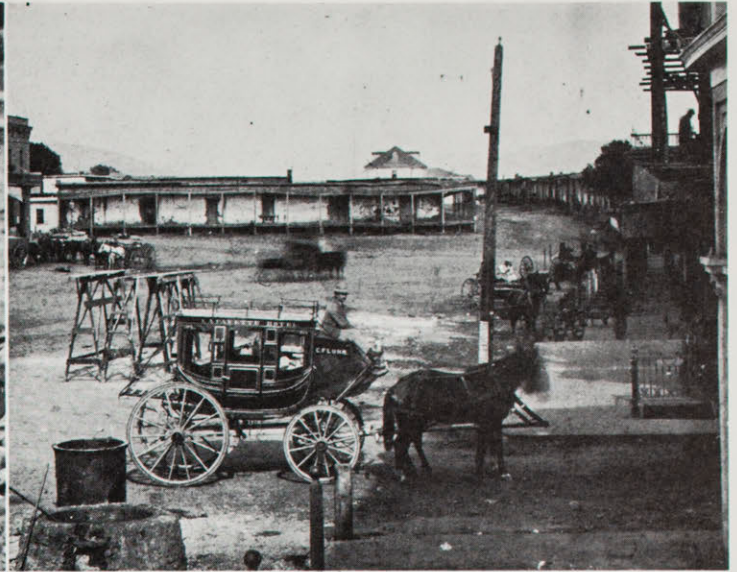
Exclusion Act of 1882 was renewed in 1902, and even the alarmists cooled off a bit. Chinese "cheap labor" was no longer a threat to the Los Angeles workman, if it ever had been, for Chinese laborers demanded wages equal or nearly equal to those of the majority. Though adolescent boys still plagued laundrymen occasionally, they were arrested and punished for their delinquencies in the 1900's. This contrasted with the indifference that the police showed in 1887, when arsonists burned Negro Alley and went unpunished. However little change there had been in the disdainful attitude of Americans toward Chinese, there was less overt hostility. A cynic might say that this change in attitude came because now the Caucasian community had focused its antagonism on the Japanese or the Mexican. Whatever the reason, the Chinese gradually fared better in the twentieth century, and some credit is due to the Chinese-American.

Some changes took place in the economic life of the Chinese community after 1900, when the vegetable peddler was forced into competition with produce farming on a large scale in the Imperial and San Joaquin Valleys. Refrigerated railroad cars brought tons of vegetables fresh from the Imperial Valley in mid-winter, threatening the Chinese vegetable-grower. He met the challenge well, however, for the vegetable-peddler turned produce broker. In 1900, only three out of 43 produce companies were Chinese, but by 1910, there were 17 Chinese produce companies out of 155, and the Chinese have continued to be influential in Los Angeles' wholesale produce industry to this day.

In 1900 there were but two or three Chinese restaurants in Los Angeles, frequented almost exclusively by Chinese. There were at least 15 Chinese restaurants by 1910, as Caucasian customers discovered that Chinese food was quite good and not at all poisonous as some had imagined. Several of these Chinese restaurants were outside Chinatown and a few were in downtown Los Angeles.

The first decade of this century was one of some slight social progress, as well. It might be admitted that Americans had less of a Chinese problem than Chinese had an American problem. The efforts of missionaries to convert Chinese to Christianity met with more success as





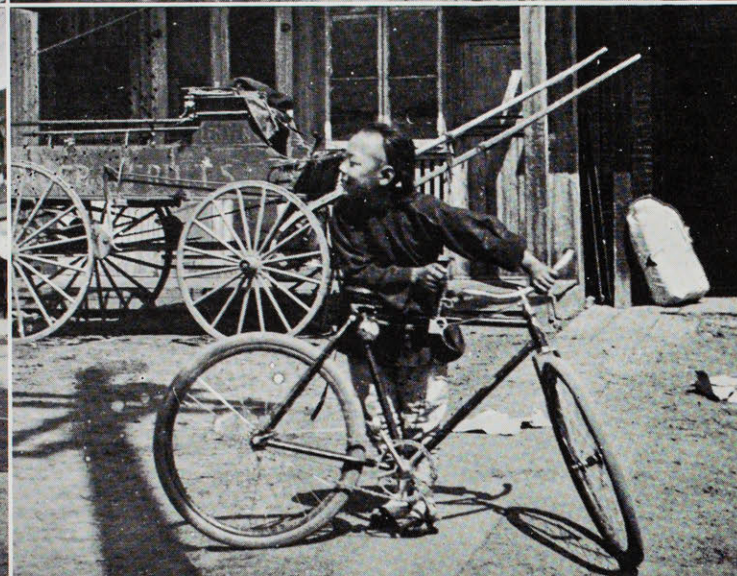
Chinese and Caucasian miners in the gold-fields, circa 1850. The non-Chinese appear to be Americans, judging from their beard styles and clothes. Note the Panama hats used by the Chinese, instead of more traditional Chinese hats. In later years Chinese hats were imported for the miners. What appear to be caps on three of the men are actually the queues wrapped tightly around the head so that it will not interfere with work. This practice of wrapping the queue may be the origin of the term "high-binder" as applied to Chinese tong members. This photo was copied from a daguerreotype, and was taken in the vicinity of Auburn.

A heavy-laden laborer on Marchessault, circa 1905. This photo might serve as a reminder that work meant hard work for most of Los Angeles' population at the turn of the century. Self-employed Chinese sometimes worked twelve to eighteen hours daily, and laborers would work twelve hours daily as a rule, receiving from ten to fifteen cents per hour. (Washburn photo)

Arcadia Street and Negro Alley, 1871. This photo was probably taken a few days after the Chinese massacre of October 24th, 1871. The long, low adobe building is the Coronel adobe, built by Ignacio Coronel about 1838. Negro Alley begins at the right of the Coronel adobe and runs north to the Plaza. Several Chinese lived in the Coronel adobe and in the adobes on Negro Alley. In the 1870 census 68 Chinese lived in this area, more than one-third of the Chinese in Los Angeles. The holes and scars at the right end of the adobe might be bullet holes made by the rioters who fired volleys of shots into the Chinese quarters. The photograph was taken from the corner of Aliso and Los Angeles Streets,

A woman comes home from shopping, circa 1903. This picture was taken at Laura Street just north of Apablasa, and is one of Washburn's better photos. The unpaved streets, box-like brick buildings, and lonely figure make a good composition. (Washburn photo)





Men reading wall posters on Alameda Street, circa 1905. Posters announcing new jobs, local banquets and other celebrations, lost-and-found columns, and general news of importance to the community were placed in certain spots in Chinatown. Most Chinese men were literate in Los Angeles, contrary to popular opinion. In the background can be seen some of the cribs of Alameda Street. There were few Chinese prostitutes in Los Angeles at any time, however. Most of the few Chinese women in Los Angeles were either wives or in some cases the concubines of wealthy merchants. (Washburn photo)

Train on Alameda Street, circa 1902. A familiar sight on Alameda in Chinatown were the passenger and freight trains which ran up and down the street every day. Sometimes a nuisance to the Chinese, especially when wagons or even people were struck by them, the trains were probably a delight to the young children. (Washburn photo)

A dragon float filled with Chinese-American children, circa 1903. This float may have been used in the Parade to welcome President Roosevelt to Los Angeles in 1903. The American flags proclaim the nationality of the children, who are largely girls in this float. There seems to have been some sense of national propriety concerning the American flag in Chinese parades. The large flag carried in the Chinese section of the parade for President Roosevelt in 1903 was borne by Walter Chew, a Chinese-American. (Washburn photo)

A Chinese-American child and his bicycle, circa 1902. This boy seems quite satisfied with his bicycle, and but few children his age had bicycles in Los Angeles at that time. The wagon in the background belongs to the Lem Yen Produce Company, one of the pioneer Chinese produce enterprises in Los Angeles. (Washburn photo)





Peter Johnson, Negro evangelist, circa 1902. Peter Johnson was a lay-preacher who wished to bring the Christianity to the Chinese, although he probably had no more success than the average missionary of that day. He is shown here on Negro Alley in front of the Wong Association, which is to the left. (Washburn photo)

Marchessault Street east from Alameda Street, 1920. The two chop suey signs indicate the restaurants of Man Jen Low, on the left and upstairs, and Tuey Far Low on the right. Tuey Far Low was in business before 1904, and Man Jen Low was not long after that year an established business. Both survived the demolition of Old Chinatown in the 1930's and are noted Chinese restaurants today. The Wing On Tong Drug Store just left of Tuey Far Low is now on North Spring Street.

Ferguson Alley, looking west from Alameda, 1920. This alley once ran from the Plaza to Alameda Street, and was at one time the gateway to the crib district. In later years it became exclusively Chinese with the exception of Jerry's Joynt, a well-known Los Angeles bistro of the 1930's, located at the corner of Ferguson Alley and Los Angeles Street. At the present time Ferguson Alley is an on-ramp to the Santa Ana Freeway. In the background can be seen the old firehouse building, which has been recently restored. (Pierce photo)

757½ North Alameda Street, 1920. The little Yit Sing Store on Alameda Street sold a variety of articles, including poultry, Chinese nuts, China lilies, candies, and sundries. Laundry and fish are drying on the roof.



their tactics became more rational. Chinese-Americans were often Christians, for they had a greater degree of social acceptance as such, at least among Americans. One impediment to conversion to Christianity was the intolerance of some missionaries to the Confucian, Taoist, and Buddhist beliefs of their prospective converts. Many Chinese could see no real conflict between their philosophies and the gospel espoused by missionaries. Dualism in religion was less of a problem to the Chinese than to the Caucasian, and a potential convert could be quickly alienated by missionary tirades against such Chinese practices as veneration of one's fore-fathers. In the early 1900's, an effort to convert through good example rather than exhortation met with more success. The Bethlehem mission just south of Chinatown provided aid for needy orientals during periods of economic stress, such as the depression of 1908, giving free meals, baths, and used clothing. A yearly excursion by P. E. train to Santa Monica Beach was given by a ladies' missionary society for Chinese women and children. In the excursion of 1902, the women and children filled an entire P. E. car, which must have included the majority of the Chinese wives in Chinatown. The ratio of Chinese men to women was about ten to one in that period.

The decade closed with a satisfactory note as far as the Chinese were concerned, when the cribs next to Chinatown were closed and vice became more discreet in Los Angeles. The prostitute quarters did not remain vacant long, however, for the owners discovered that Chinese and Japanese merchants were only too eager to rent them as little shops or storerooms. The hoodlum element was less prevalent after the anti-vice crusade of 1909, and drifted away from Chinatown. The Alameda Street mobs of men and boys, who had delighted in teasing or injuring Chinese, dwindled to just a few stragglers.

Americans came to appreciate Chinatown a little more in Los Angeles in other ways, as well. Chinese festivals were attended by interested spectators more frequently, who replaced the mocking hooligans of the previous decade. Chinese pageantry had always been appreciated in Los Angeles, but it was usually preferred out of context, that is, outside

Chinatown. During the Los Angeles Fiestas, which started in 1894, the Chinese dragon, costumed marchers, and floats were a delight to parade-viewers. The white-collar visitor to Chinatown was not much in evidence before the suppression of the red-light district, although a few went to attend Chinese New Year festivals and other celebrations. One such visitor was Frank L. Washburn, an employee of the Los Angeles Gas and Electric Corporation, who was also an amateur photographer. Born in Iowa, Washburn had come as a young man to Los Angeles with his parents in the 1880's. He evidently knew the city fairly well, but he was not interested in photographing it as much as he enjoyed taking pictures of vacation spots and tourist resorts. Nevertheless, he did become interested in one area of Los Angeles for a period of two or three years, and Chinatown was well-photographed approximately between 1902 and 1905. About 100 negatives Washburn took of Chinatown are in the Museum collection, and he unintentionally became to Los Angeles' Chinatown what Arnold Genthe was to San Francisco's, if such a comparison can be made between a professional and amateur photographer, or between Los Angeles' Chinatown and the San Francisco community which was ten times the size. Washburn photographed what others later missed in Los Angeles' Chinatown, for he was interested in the Chinese themselves, rather than buildings or parade costumes, although he shot many parade photos himself. Today, 65 years later, we are fortunate that he did not neglect his hobby or Chinatown, for these photos are among the best pictures of the Los Angeles Chinese around the turn of the century.

Old Chinatown survived well into the 1930's, although throughout the decade of the 1920's, the Chinese were spreading out into other parts of the city. Those Chinese with families preferred to live in residential districts, especially if they had a business outside Chinatown. The old bachelors still clung to the old brick buildings and enjoyed sitting and talking on their balconies during the evening. In 1933, their tranquil community was shocked to find that more than half of Chinatown would be torn down to make way for the Union Station. All of Chinatown east of Alameda was leveled in the

next two or three years. With the help of the railroad companies, a new site for Chinatown was acquired and built in a short time. On North Broadway, New Chinatown was opened in 1938 to replace the old, a gala event for the young Chinese, but the old people still longed for Apablasa Street. That portion of the old city opposite the Plaza lingered on for more than a decade, but for some reason or other, it was leveled for a park in 1949-1950. Where Ferguson Alley once led between Los Angeles and Alameda Streets is now a freeway onramp. The old Lugo House, once the quarters of the Hop Sing Tong, was demolished and the site left vacant except for a statue of Father Serra.

Today, three major Chinese retail areas exist. The most famous is that known as New Chinatown, on North Broadway and North Hill Street between College and Bernard Streets. It is a major tourist attraction, noted for its restaurants, cocktail lounges, and souvenir shops. Nearby, a block or so southeast, is the North Spring Street Chinese area. Formerly known as China City, it was once the rival of New Chinatown. Now it seems that the two communities are fusing together as new Chinese businesses have opened in the few blocks that separate them. North Spring Street is the shopping district for older Chinese, who seem to enjoy it more than New Chinatown. The third major Chinese settlement is at Ninth and San Pedro Streets, where the produce markets are. Wholesale produce is still a potent economic factor in the Chinese community.

Today, most Los Angeles Chinese are scattered about the city, although many still live in the three Chinese districts. There are now Chinese from all parts of China, although the great majority are still Cantonese. The Chinese from northern China are not historically linked with the older Chinese history of California, but they form a vague attachment with the older Cantonese community. Conservative Mandarin and Cantonese people almost consider themselves distinct nationalities, it would seem. The future of the Chinese as a distinct ethnic community does not seem likely as American-born Chinese seek homes outside the community. It will require effort to remain distinctly Chinese when there is no Chinatown.



# The Maricopa Brea



by J. R. Macdonald  
Senior Curator of  
Vertebrate Paleontology

The name of this fossil deposit sounds like a fancy nightclub, and when we add the name of the finder, it becomes Wally Block's Maricopa Brea—more nightclub-ish than ever. Actually, the Maricopa Brea is a late Pleistocene deposit of fossil animals, closely related in time and composition to Rancho la Brea.

Several years ago, W. E. Block, an engineer with the Standard Oil Company of California, found this deposit while stationed at Taft, California. He collected a few specimens and brought them to the Museum for identification. He was encouraged to continue collecting but was then transferred to San Francisco. Upon reassignment to Southern California, he

resumed his collecting activities and donated a large number of specimens to the Museum. A couple of such donations led to an examination of the site by the writer and other members of the staff. Wally had found a fossil treasure trove.

It seemed for a week or so that we were commuting back and forth between Los Angeles and Maricopa. The site was a magnet that pulled us as often as we could get away. Sabre-tooth cats, gigantic jaguars, a bear larger than the Kodiak, dire wolves, coyotes, badgers, eagles, vultures, rabbits, horses, camels, bison, meadowmice, snakes and beetles were the initial take.

Here was the fossil find of the decade.

Preliminary studies suggested that this was an ancient waterhole near the foot of the mountains. The San Emigdio Range rising from the plain about a mile to the south probably looks much the same today as it did when the fossils were being accumulated. To the north stretches the gently sloping alluvial apron of the southern end of the San Joaquin Valley. With a slightly moister climate producing more trees and taller grass, the local scene differed little in the late Pleistocene from what can be seen today. The immediate site of the locale is the south edge of a very low, broad hill rising not more than twenty feet above the plain. The hill is capped by about two feet of asphalt. Whether this is a natural occurrence or



Eileen Macdonald, Hadley, Marion and Nan Stuart working at Maricopa Site.



James Garbani and Theodore Downs excavating Dire Wolf skulls.



the result of dumping from a shallow oil well that was dug here, is not known at the present time. At the southern foot of this mound is a series of shallow sag ponds, small depressions developed along a fault zone, dry now, but probably briefly filled with a foot of water after rainy spells, and certainly the site of springs in the recent geologic past. The bone bed lies between the sag ponds and the base of the slope. A foot to two feet in thickness, it is covered with a minimum of two feet of oil impregnated sand, silt and clay overburden. The bones are found in

a mixture of clay and asphalt. Unlike Rancho la Brea, they are not heavily impregnated with petroleum and asphalt but are "dry" and brittle like the bones found in many cave deposits. There is little association of skeletal remains. Most of the skeletons have been badly scattered and mixed into a pile of jackstraws.

As soon as a site is found, the investigator immediately begins working on hypotheses to explain the origin and mode of accumulation of the deposit. "The Scientific Method" comes into play.

This is a somewhat stuffy way of saying that you are trying to logically explain a natural phenomenon. There are basic steps to follow in this reasoning process, but I doubt very much if anyone ever really formalizes their thinking into these phases in the way one would when writing the formal propositions for a debate. Basically, the scientific method attempts to answer the following questions:

What are the known facts of the problem?

How do these facts appear to be related?





James Garbani points out Dire Wolf skull to Dr. Theodore Downs and Mrs. Hadley Stuart.



James Garbani points out Dire Wolf skull to Dr. Herbert Friedmann.

How may this relationship be explained?

Is this explanation supported by all obtainable new information?

When this process is "completed," you have developed a hypothesis. Then the sniping begins. Others will have arrived at different answers resulting from the application of their training and background. If your shirt isn't too badly stuffed, you will welcome these ideas and actually encourage someone to act as the "Devil's Advocate" in order to try to pull down your hypothesis. This is part of the

great fun of science. Sometimes scientists, who are also people, get emotionally involved with their hypotheses: they consider them as their children who must be defended from the onslaughts of the unenlightened who look upon them as little monsters. It is unfortunate that such differences of opinion have caused lifelong feuds and have developed great schisms within disciplines. Some of these splits have not really healed after the passage of several generations. One of the great feuds in this country in Vertebrate Paleontology developed between E.

D. Cope and Othniel Marsh during the last third of the 19th century. Both were great men who were pushing back the frontiers of knowledge and stepping on each other's toes while they were doing it. Even today, you will find students of the students of the protagonists "who would rather fight than switch," or even concede a modicum of greatness to the opponent.

A mature worker will accept the ideas and concepts of others to be weighed against his hypothesis; some such thoughts may be incorporated into his





Miss Nan Stuart excavating part of horse skeleton.

scheme and others rejected. Friendships are not shattered, although you may reserve a small corner in which you feel that your friend and co-worker of many years is, in this case, obviously blinded and showing either signs of idiocy or insipient senility.

The principle of Occam's Razor must always be kept in mind: the simplest explanation generally turns out to be the most logical. Complexly structured hypotheses collapse with an embarrassing crash when a well-administered logical kick is applied to an improperly balanced fundament.

So, the question is, how did the Maricopa Brea deposit develop? Preliminary working hypotheses might include, 1) natural deaths at the waterhole, 2) entrapment in the mud at the waterhole, 3) entrapment in the asphalt at the site, or 4) a combination of these. The asphalt associated with the material does not appear to be a trapping factor but simply a preservative which kept the ground water and bacteria away from the bones. Further studies and population analysis may change this concept: the abundance of carnivores does present a problem at this writing and will have to be fitted into the final solution.

Finding a site and making short collecting trips with staff and volunteers is one thing, but finding money, people and time for proper collecting is something else again. County travel funds are practically nonexistent. The members of the laboratory crew in the Vertebrate Paleontology Section are virtually chained to their benches with our expanding exhibit program. When each mounted dinosaur skeleton represents from two to five man years of preparator time in the laboratory, four preparators don't stretch very far.

Fortunately in this case, three necessary ingredients for a successful exploitation of a site came together. A concentration of fossil material has been found and made available to us. Financing is being supplied by an anonymous donor who has generously supported two other fossil digs and is always interested in new and exciting discoveries. An available collector is James H. Garbani. Jimmy is Harley Garbani's oldest son and seems to be following in his father's footsteps as a fossil finder and collector. He has been working as a preparator in the Museum for the past year as a non-County employee and as foreman for Dr. Morris' Baja California dinosaur collect-

ing parties. With the presentation of the donor's check, Jimmy was jerked off of his workbench and pointed toward Maricopa. He was scheduled for a month's collecting to be fitted in before leaving for the summer's work in Baja California. Jimmy's month went by in a hurry. More than a dozen plastered blocks of fossils were removed and a great number of small bags of isolated bones and skulls came with them.

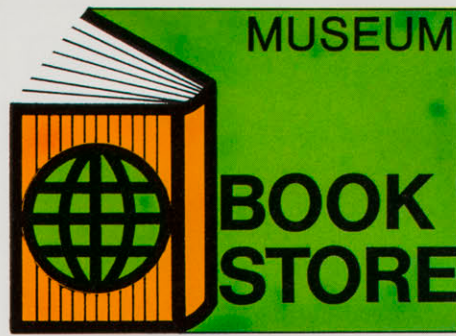
Members of the regular Museum staff continued to make at least weekly visits to the site to bring supplies to the field, help with the plastering and moving of large blocks, and to haul the loot back to the Museum.

When Jimmy's month ran out we hired Wally Block's nephew, college student James Farrell of Taft and a friend to continue the work through the summer. The number of specimens constantly increased and a few new animals were found. It is much too early to give a complete list of the fauna as several years preparation will be needed before all of the material is removed from its blocks and prepared for study.

The fauna is similar to that found at Rancho la Brea and the brea deposit at McKittrick about thirty miles west of Maricopa. A preliminary review suggests that some of the carnivores, particularly the dire wolf and sabre-tooth cat, are somewhat larger than those from Rancho la Brea. The study of this fauna and a comparison with the Rancho la Brea and McKittrick faunas will give science an important insight into local population variations during the late Pleistocene in Southern California.

One unpleasant aspect of the work was the presence of Valley Fever in the area. This debilitating lung condition is caused by spores present in the dust and dirt. Endemic in the San Joaquin and San Fernando Valleys, the oily dust of the Maricopa brea put three of the commuting diggers to bed, with one spending a week in the hospital. Suddenly we were all guinea pigs for a medical group studying the disease. Blood was taken, tests were given and to protect the rest of the staff, all of our collections went through the Museum's fumigator. Well, that's Vertebrate Paleontology—you never know what your investigations are going to lead to.





# Museum Holiday Greeting Cards

Pictorial Christmas cards are to be on sale at the Museum for 1967 featuring two scenes from Mexican Codex Laud, replicas of which are now on sale at the Museum Bookstore. The replica of the Codex, includes an introductory booklet describing the work by C. A. Burland of The British Museum. Title is as follows: CODEX LAUD, Bodleian Library, Oxford, printed in Graz, Austria, 1966, 35 pages.

The Codex is a screen-folded, illustrated series of 48 plates showing the dangers faced during the life of a Mexican person in late pre-Spanish times. The style suggests Toltec or Aztec origin with figures very precisely drawn and outlined in black. Colors are water-

based in red, yellow, light blue, green and golden brown on a white plaster background affixed to deerhide. There are 24 sections with figures on both front and back sides. Page dimensions are remarkably uniform in the folded document. Some commentators feel that this Codex was one of a set of five associated with the four cardinal points and a central position.

The Codex was donated to the Bodleian Library, Oxford University in 1636 by Archbishop William Laud and bears the designation "Ms Laud Misc 678." Other facsimiles of Codex Laud have been made in the past and scholars of many nations continue to work on its message.

**There are four different designs on these cards. Regular retail 20¢ 25% discount to Alliance members with orders of 50 or more.**

Phone 746-0410, ext. 229.



# Minerals of Los Angeles County

## Part 1. Catalina Island, Palos Verdes, and Soledad Basin.

by  
**Veryle Carnahan**  
Mineral Research Society  
of California

Los Angeles County has a mineralogical history of interest to the collector, the student and the resident of its vast urban and suburban areas. The minerals found today are as varied as the geology of the region. Silver and gold have always been magic words to conjure up visions of rich veins of ore in faraway places, but these minerals and many more have been found within the boundaries of the county. The deserted mines of Catalina Island, the sea cliffs of the Palos Verdes Peninsula, the desert borate deposits, the vanished lodes and placers of the mountain ridges and canyons have much to contribute in excellent specimens or historical notes.

The Mineral Research Society of California, a group of serious amateur mineralogists concerned about the vanishing county mineral deposits, initiated a project to provide the Los Angeles County Museum of Natural History with a suite of minerals representative of the seven geological provinces of the county: Catalina Island, Palos Verdes Peninsula, Soledad Basin, Santa Monica Mountains,

San Gabriel Mountains and the Northern Ridges. Many famous mines have been depleted or have stood idle for many years. Some have been surrounded and engulfed by the spreading metropolis and specimens are no longer available, but material representative of deposits still in existence, where collecting is possible and permissible, were added to the collection. Owners of specimen material collected in the area many years ago were contacted and through their generosity these specimens were donated or loaned to supplement the collection. Many of these specimens are now on display in the museum's new Southern California Geology Hall.

### CATALINA ISLAND

The Valley of the Pots on Santa Catalina Island, located about ten miles northwest of the town of Avalon, is probably the oldest mining district in the county and the logical place to begin an account of the county's minerals. The talc quarries on the island were among the most important on the west coast

during the days when steatite, a massive talc rich rock, was an important trade commodity of the Indians. Practically all of the excavated Indian sites have yielded steatite receptacles, bowls, "which were carved out of the bed rock, attached by a stem, which was later broken off and smoothed away". Chisels of hard slate were used to work the soft steatite and the bowl was finished by rubbing the surface with flat sandstone files. The bowls and other implements fashioned from this material were transported across the channel to the mainland in plank canoes.

The quarries were recorded by the Spanish explorers of the late eighteenth century and rediscovered in 1876 by P. Schumacher, an archaeologist employed by the Smithsonian Institution. The Mineral Research Society collected in the quarries in 1965, and found them the source of many minerals of the talc group and alteration products of those minerals.

The talc is a hydration product in the alteration of magnesian silicates and is



associated with actinolite and serpentine, found in abundance on the island. Radiating green crystals of actinolite were collected, as well as talc pseudomorphs after tremolite. The tremolite has altered from a basic silicate of calcium and magnesium to a hydrous magnesium silicate without changing the form of its stellate or starlike crystals. This group of minerals is featured in the display.

Today the quarries are overgrown, the outline of the original mining area hard to distinguish. The ground is covered with minute particles of waxy talc making the surface slippery and walking and climbing difficult. An appropriate description of the area is found in the writings of an early Moorish poet. In his language the name for talc was **stella terroe**, "star of the earth" because, he explained, "like a star with silvery luster it shines".

The island is also the site of many abandoned prospect holes, discontinued mining operations and a few active stone quarries. Several veins of silver bearing lead ore were found on Santa Catalina which were worked from time to time since 1859, but the deposits were known to the Spanish as early as 1792. The ore was of an unusually high grade but occurred in small deposits and no systematic development was ever undertaken, consequently the output was small. The outstanding mineralized district is that adjacent to the Black Jack Mine on Black Jack Mountain. Important economic minerals in the ore were sphalerite, galena and silver, but the collector finds a much wider range of interesting minerals. Black Jack, a dark variety of sphalerite, zinc sulphide, for which the mine was named, occurs in fine crystals. The sphalerite is also found in yellowish brown crystals with a resinous luster associated with crystals of galena, lead sulphide. Other minerals found on the dumps of the old mining venture are barite, dolomite, arsenopyrite and fluorite.

The quartz outcroppings on the hills in the interior of the island have yielded fine specimens of smoky quartz, citrine, amethyst and clear or iron stained crystals. Semi-transparent chalcedony called "moonstones" and a variety of jasper "catalinaite" were once found on the beaches but little remains now for the collector.

## Catalina Island



Talc after tremolite  
Size: 5" x 6"



Group of smoky quartz crystals  
Size: 3" x 2"

Tremolite  
Size: 3" x 6"



Actinolite in talc  
Green prisms in silvery talc matrix  
Size: 3" x 4"





## PALOS VERDES HILLS

The Palos Verdes Hills are a prehistoric island anchored today as a part of the southern California landscape. Geologists think these hills were separate from the mainland during the ice age about a million years ago. The oldest visible rocks are a series of metamorphic schists called the Catalina Schist, so named because of its close resemblance to the schist on the island.

The hills were gradually elevated above the sea, in a series of uplifts to form an island. According to geologists, between each of these pulses of uplift, sea level remained nearly stationary, and the waves cut broad steps or terraces into the rocks at sea level. The uplift continued and the shallow sea floor east of the island also emerged to give a dry land connection with the mainland, and the Palos Verdes peninsula as collectors know it today, was formed.

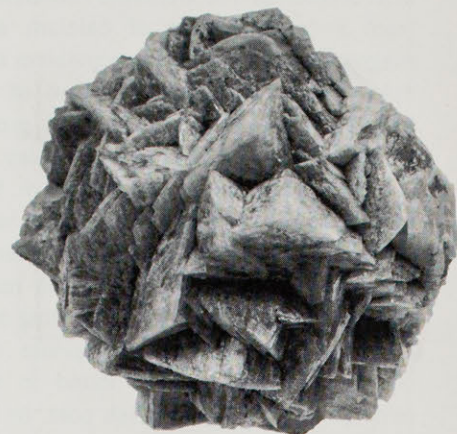
Recorded first by Juan Rodriguez Cabrillo, the hills were a grazing land for cattle and horses during the colonial period. In 1827 the rolling hills became part of the 32,000 acre Rancho de los Palos Verdes. Descriptions of the geology, minerals and fossils of the area were made by T. A. Conrad in 1855 and W. P. Blake in 1856 and 1857 in work done for various government agencies.

The sea cliffs characteristic of the coastline of the peninsula are usually about 100 feet in height. The cliffs contain many minerals in beautifully crystallized specimens. Extensive veins of barite occur in many places, with crystals lining both sides of cracks and fissures in the shale. Several forms and colors of the barium sulphate are found, including pale blue, cream, and darker shades of red and brown where crystals are stained with iron oxide. These crystals have been sought after by collectors for many years and are now difficult to find, but choice groups are a part of the museum display. Water percolating down the cliffs or through the crevices in several quarries, evaporates and deposits crystals of gypsum that are especially attractive. The crystals are white and curved much like the foamy crest of the waves that break against the cliffs a short distance away. Another mineral formed by effluorescence is epsomite,

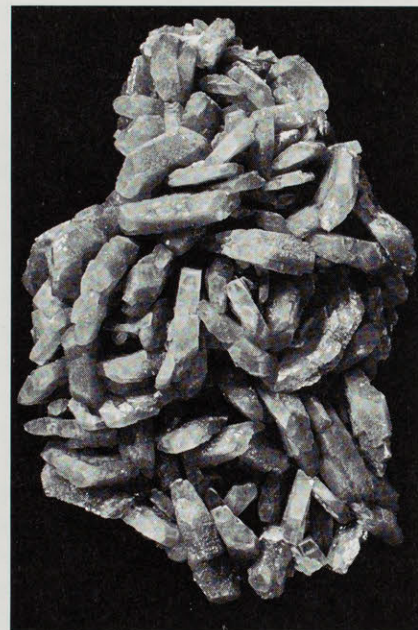
natural epsom salt. The mineral is snow white and delicate but dries out when removed from the sea air and crumbles unless protected in a sealed container. Pyrite, decomposing in the presence of magnesium rich rocks, accounts for the masses of hair-like needles of epsomite.

Many other minerals are found in the Palos Verdes area. Dolomite in large crystals, occasionally with clear quartz crystals perched on the end of each crystal. Dolomite, carbonate of calcium and magnesium, is a commercial rock with many applications. The glaucophane schists, a type of rock that occurs nowhere in the world as extensively as in California, contains other minerals, many common to the peninsula and Catalina Island, including crossite and lawsonite. One of the most important nonmetallic mineral commodities mined in Los Angeles County for many years was diatomite. Diatomite is a sedimentary rock consisting of siliceous skeletons of microscopic, single cell aquatic plants (diatoms) which lived in great abundance in Miocene seas. Diatomaceous earth is formed by unbelievable numbers of skeletons of dead diatoms which rain down on the ocean floor, as many as a million to a quart of sea water. The material was mined in Palos Verdes and is used, because of its great porosity, in hundreds of industrial processes. A pound of diatomite, which mineralogically is classed as opal, has a surface area equivalent to about two football fields.

## Palos Verdes Hills

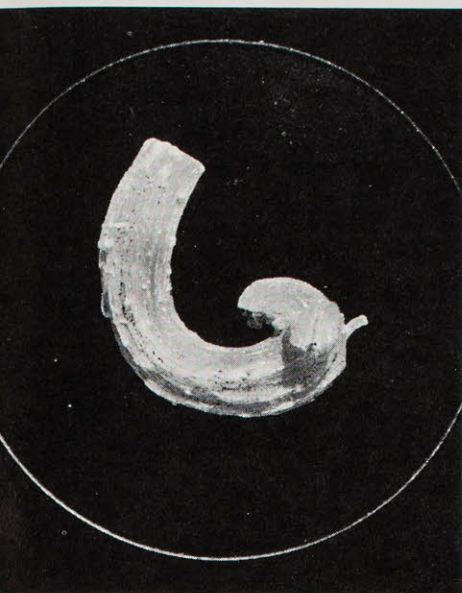


Dolomite Crystals  
Size: 3" x 3"

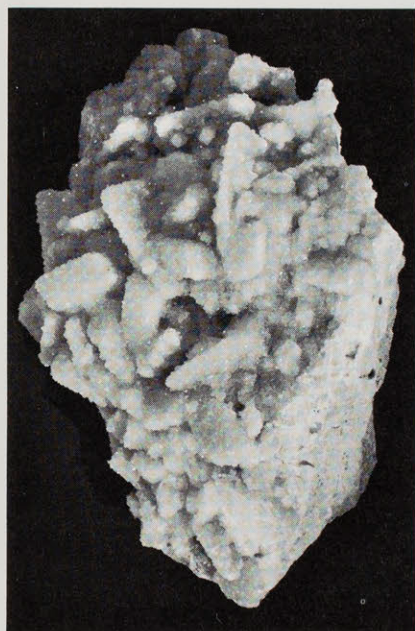


Barite  
Size: 12" x 8"





Gypsum showing curved crystal #21  
Size: 1" x 3/4"



Drusy quartz crystals coating barite crystals  
Size: 15" x 10"

#### SOLEDAD BASIN

A second important nonmetallic commodity, but one from a deposit active in another day was the boron deposit in Tick Canyon in the Soledad Basin. The Sterling Borax Mine was the county's only borate deposit. The mine, an important deposit of the mineral, colemanite, produced 100,000 tons of this mineral during the years 1908 to 1922, giving Los Angeles County an important link in the history of the borax industry.

Geologists disagree on the origin of the formation of the deposit. Some authorities believe the site of the deposit was originally a "marshy area with mud, marl, calcareous tufa and abundant organic matter and that waters charged with boric acid converted calcium carbonate into calcium borate". Others consider it "likely that the area was a borax-ulexite playa, similar to the present floor of Death Valley, and that, after uplift and tilting, sodium was removed in solution and the boron combined with calcium from calcareous sediments to form colemanite. Most experts do agree that the boron originated in the associated volcanic rocks.

The operation at the Sterling Mine was extensive. Colemanite was discovered on the property in 1907 and production began the following year. Colemanite, a mineral first discovered in Death Valley in 1882, is a hydrous calcium borate. A history of the operations records the following: colemanite was mined through two vertical shafts, each 350 feet deep, from workings on the 100-200-300 foot levels and from numerous auxiliary openings. The deposit was mined along a vein for a distance of 800 to 1000 feet, one segment of about 600 feet being mined on all three levels. Pumping was required to keep the lower levels free

from water. During the earliest operations, colemanite was sacked for shipment, later four calcining furnaces were installed, and the refined ore, 48 to 50 percent boric acid was produced. In 1921 the owners, Sterling Borax Co., sold the nearly depleted deposit to Pacific Coast Borax Company, which conducted a "scavenging operation", in which all of the remaining known ore was removed, and the mine closed in 1922, the plant dismantled in 1926.

Today the dumps of this operation prove fertile ground for the mineral collector and for those hunting rocks to cut and polish. The concrete foundations of the furnaces remain visible in spite of flooding and several decades of erosion in the canyon.

The crystals of colemanite were crude or very small, but several rarer minerals are prizes for the collectors. Howlite, a rather rare hydrous silico-borate occurs in cauliflower-like masses, white with veins of a black carbonaceous material in an attractive pattern. The nodules were not utilized as ore because of the high silica content, but they take a fine polish and are used in the lapidary arts. It was discovered in 1957 that the massive material is occasionally coated with micro crystals of howlite, and today micromounters (those who collect minute crystals and enjoy their collections under magnification) have renewed interest in the dumps in Tick Canyon. Besides the howlite crystals the newly described bakerite crystals are cherished prizes. Bakerite, a hydrated strontium borate, occurs on the surface of massive bakerite, in clear crystals in two distinct habits. A fine specimen of celestite crystals, strontium sulphate, on bakerite, was also obtained for the museum collection.

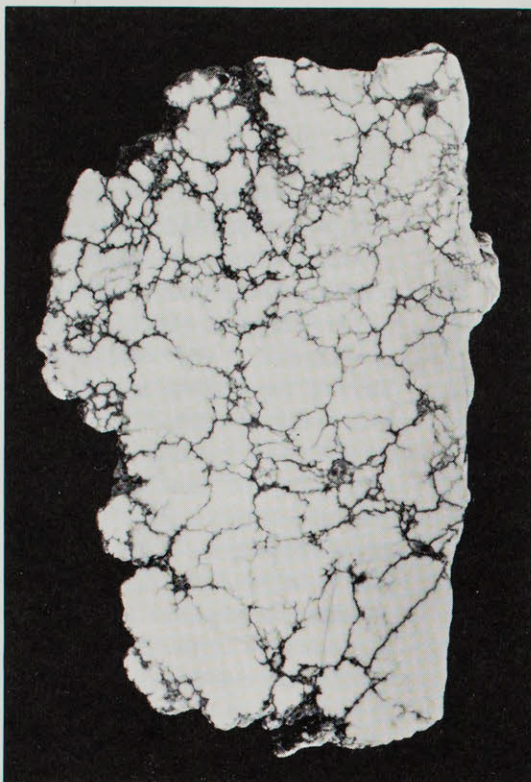
The hydrous sodium and calcium borates, probertite and ulexite are found here in an unusual form. The ulexite here is the same mineral as the "cotton ball" ulexite usually found in playa deposits, but in this case, squeezed and flattened in the compression and tilting of the layers of the formation which at Tick Canyon is now nearly vertical. The probertite occurs as flattened aggregates of radiating prisms and the ulexite is in compact divergent masses with a silky luster. Both are common minerals on the dumps.



Veatchite, hydrated strontium borate, was first found at Tick Canyon, and described in 1938 in the American Mineralogist Magazine, giving Los Angeles County a "type locality" mineral. It occurs in thin silvery plates or fibers on fracture surfaces of the matrix rock.

The hills surrounding the dumps were, in the past, covered with agate nodules, attractive blue and white fortification agate, and some bloodstone, but this material is now scarce. A trail up the canyon beyond the dumps and over a dry waterfall, leads to an outcrop of basalt which contains vesicles in which members of the zeolite family of minerals have formed. A vesicle is a small cavity in an igneous rock formed by a bubble of gas during solidification of the rock. Analcime natrolite, and calcite, in minute but perfect crystals in endless combinations are gems for the crystal collector. Tick Canyon has the rare and the beautiful, making it one of the county's choice mineral localities. (Part II on Los Angeles County minerals will include those from the Santa Monica Mountains, San Gabriel Mountains and the Northern Ridges).

## Soledad Basin



Howlite showing black pattern  
on white  
Size: 4" x 6"



Celestite on bakerite #15  
Size: 3" x 4"



## New Curators

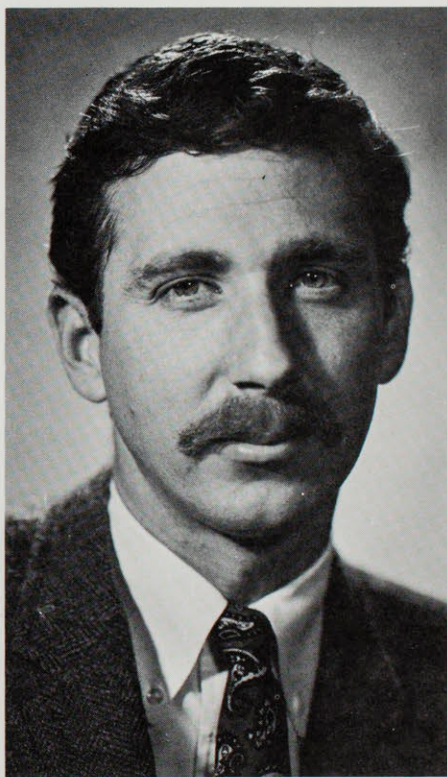
New curators in botany and mammalogy have been added recently to the staff of the Los Angeles County Museum of Natural History, according to Dr. Herbert Friedmann, director.

Filling a new post as senior curator of botany, is Dr. Richard S. Felger, recently assistant professor of botany and zoology at the University of Colorado.

As senior curator of botany, Dr. Felger brings to the museum a wide knowledge of the ecology and systematics of plant life peculiar to the desert areas of southwestern United States and northern Mexico. Studies in this field are of growing scientific importance, Dr. Friedmann pointed out.

Now living in Beverly Hills, Dr. Felger attended Los Angeles schools, graduating from Fairfax high school before obtaining his degrees at the University of Arizona.

Dr. Donald R. Patten is the new curator of mammalogy to replace Dr. Charles A. McLaughlin, who returns to teaching this fall at the University of Wyoming.



**Richard S. Felger**



**Donald R. Patten**

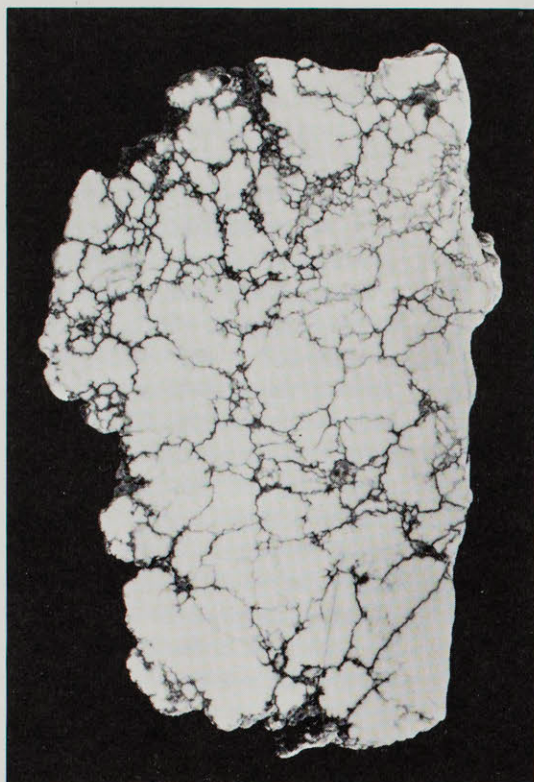
Dr. Patten, born in Kansas City and with degrees from the University of Missouri and Texas A & M, where he also taught, has conducted most of his research on mammals that are found in the desert areas of the southwest and Mexico. His current research interest centers on bats, particularly the New World fruit-eating bats.



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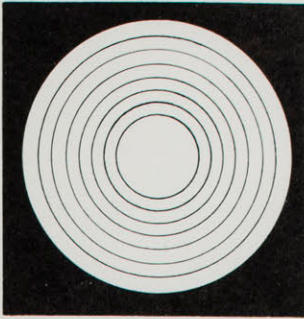


Howlite :  
on white  
Size: 4"



Celestine  
Size: 3"





## MUSEUM SPOTLIGHT

### New Curators

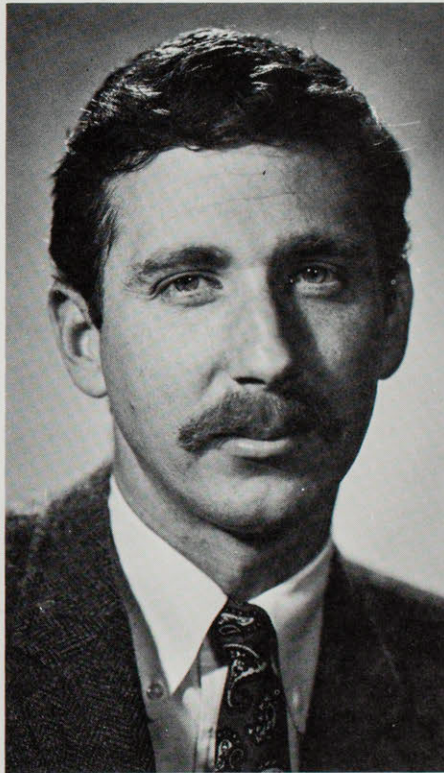
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Los Angeles County Museum of Natural History  
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Return Requested

